

FAIRVIEW LAKE #2



Introduction

Fairview Lake #2 is the larger of the Fairview Lakes--two adjacent lakes in a wide glaciated graben valley on the north end of the Wasatch Plateau. Lake #2 is intermediate-sized, while Lake #1 is much smaller. The lakes are privately owned and have summer homes on their northeast shore.

The lakes were created in 1869 by the construction of an earth-fill dam. Water is captured from the headwaters of the Price River and stored for agricultural use in the Sanpete Valley. The reservoir and shoreline are owned by the Cottonwood-Gooseberry Irrigation Company with somewhat restricted public access. Reservoir water is used for irrigation, recreation, and cold water aquatic habitat. No changes are anticipated.

Characteristics and Morphometry

Lake elevation (meters / feet)	2,735 / 8,975
Surface area (hectares / acres)	42.5 / 105
Watershed area (hectares / acres)	373 / 922
Volume (m ³ / acre-feet)	
capacity	2,712,600 / 2,200
conservation pool	7 feet minimum depth
Annual inflow (m ³ / acre-feet)	3,329,100 / 2,700
Retention time (years)	0.8
Drawdown (m ³ / acre-feet)	8 / 27
Depth (meters / feet)	
maximum	12 / 40
mean	6.4 / 21
Length (meters / feet)	1,140 / 3,750
Width (meters / feet)	483 / 1,580
Shoreline (km / miles)	2.5 / 1.6

Location

County	Sanpete
Longitude / Latitude	111 18 24 / 39 38 23
USGS Map	Fairview Lakes 1965
DeLorme's Atlas and Gazetteer™	Page 46 C-1
Cataloging Unit	Price (14060007)

Recreation

The Fairview Lakes are located near U-31 between Fairview and Huntington. From Fairview, travel 10 miles up U-31 to U-264. Turn left (east) on U-264, follow it for

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2 miles and turn right (south) on Skyline Drive at Beaver Dam Reservoir. Follow Skyline Drive for 1/2 mile, and turn right (south) on a primitive road for 1 mile to Fairview Lakes.

From Huntington, follow U-31 for about 35 miles, (3 miles north of Huntington Reservoir) to Skyline Drive. Turn right (north) and follow Skyline Drive for about 3 miles to the primitive road, and turn left (south) for one mile.

Huntington Reservoir is directly accessible from U-31 which follows the shoreline for about a mile. The lake is 16 miles east of Fairview City and 32 miles northwest of Huntington City.

The area receives heavy recreational use year round. U-31 is plowed throughout the winter, and this is one of the state's premier winter recreation areas for snowmobiling and cross country skiing. Fishing is the primary summer use of the lake, although boating is also popular.

There is a private campground at the lake managed by the Fairview Lakes Association with campsites, privies, a restaurant, and a gravel boat ramp.

Flat Canyon campground, two miles east of Beaver Dam Reservoir on U-264, has 13 campsites and picnic tables. Usage fees are charged.

Watershed Description

Fairview Lake #2 has a small, natural watershed. The watershed is slightly enlarged by the 2.5 mile long Horseshoe Canal which captures runoff from Beaver Dam Ridge and the headwaters of Boulder Canyon. The watershed extends up the slope for about a mile. U-31 delineates the western and part of the southern boundary of the watershed. The area is at an extremely high elevation and receives very heavy winter snowfall. Some of the watershed is forested, while other areas have sage-grass vegetation.

The watershed high point, a point on U-31, is 2,986 m (9,800 ft) above sea level, thereby developing a complex slope of 13.6% to the reservoir. There are no perennial streams flowing into the lake, but the average gradient of the inflow is 8.3% (436 feet per mile). The outlet is a ditch that drains into White Pine Fork of Cottonwood Canyon.

Land forms composing the watershed are the shallowly dissected highlands of the Wasatch Plateau. Soils are entirely of limestone origin, resulting in the extremely hard, alkaline water found in the reservoir. Soil associations are found in Appendix III.

The vegetation communities are comprised of pine, aspen, spruce-fir, oak, maple and sagebrush-grass. The watershed receives 76 cm (30 inches) of precipitation annually with a frost-free season of 20 - 60 days at the reservoir.

The area around the lake (20% of the watershed) is

owned by the irrigation company and/or the lakes association and used for grazing and recreation, while the remaining 80% is multiple use forest lands, for hunting, recreation, and livestock grazing.

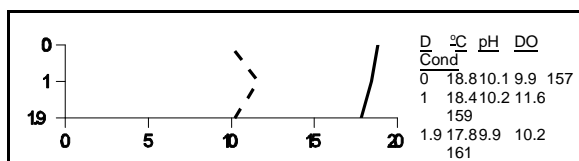
Limnological Assessment

The water quality of Fairview Lake #2 is considered very good. It is considered to be moderately hard with a hardness concentration range from 100-152 mg/L (CaCO₃). The only parameters that has exceeded State water quality

Limnological Data			
Data sampled from STORET site: 593228			
Surface Data	1981	1990	1992
Trophic Status	M	E	O
Chlorophyll TSI	-	54.03	27.10
Secchi Depth TSI	46.79	48.31	44.66
Phosphorous TSI	47.43	55.81	45.00
Average TSI	47.11	52.72	38.92
Chlorophyll <i>a</i> (ug/L)	-	10.9	0.7
Transparency (m)	2.5	2.3	2.9
Total Phosphorous (ug/L)	10.0	36.0	17.0
pH	7.8	8.1	9.3
Total Susp. Solids (mg/L)	2.5	4	<3
Total Volatile Solids (mg/L)	-	-	0
Total Residual Solids (mg/L)	-	-	3
Temperature (°C / °f)	15/60	14/57	17/63
Conductivity (umhos.cm)	270	248	204
Water Column Data			
Ammonia (mg/L)	0.05	0.03	0.03
Nitrate/Nitrite (mg/L)	0.45	0.04	0.02
Hardness (mg/L)	152	139	100
Alkalinity (mg/L)	144	133	95
Silica (mg/L)	-	-	1.1
Total Phosphorus (ug/L)	10.0	34.0	15
Miscellaneous Data			
DO (Mg/l) at 75% depth	7.4	7.7	11.0
Stratification (m)	5-6	NO	NO
Limiting Nutrient	P	N	N
Depth at Deepest Site (m)	8	3.7	1.9

standards for defined beneficial uses are phosphorus and pH. The average concentration of total phosphorus in the water column in 1990 was 34 ug/L which is higher than the recommended pollution indicator for phosphorus of 25 ug/L. However, in 1992 the average phosphorus concentration for the water column dropped to 14.5 ug/L. As indicated in the August 18, 1990 profile pH values do exceed the maximum of 9.0 criteria established for these waters. It should be noted that elevated pH values often occur with increased algal production during summer

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months. Although dissolved oxygen concentrations in late summer in 1981 showed a decline in concentration downward in the water column, recent data indicate high levels of dissolved oxygen present in the water column. This is indicative of a highly productive system at the time of monitoring. It should also be noted that in recent years only minimal water has been stored in the reservoir which could mask the dissolved oxygen demands at the sediment/water interphase. Reported fish kills during the winter season substantiate the fact that water quality impairments do exist. Low storage volumes and potential oxygen demand may be responsible for this activity. Although the reservoir was characterized as a phosphorus limited system in 1981, recent data suggest that the reservoir is currently a nitrogen limited system. Although the reservoir was classified in 1992 as oligotrophic due to an abnormally low chlorophyll-a value, TSI values indicate the reservoir is mesotrophic except for 1990 when the reservoir was classified as eutrophic. It appears that recent water levels may be influencing the eutrophication status of the reservoir. In 1981 when the reservoir had a maximum depth of 8 meters at the time of monitoring the reservoir was classified as mesotrophic. During recent years with the low water conditions the trophic status shifts frequently due to several factors. Low water levels enhance mixing of the water and induce a more frequent resuspension of the sediments. The resuspension of sediments can increase the concentration of nutrients in the water column or inhibit the productivity of the reservoir during turbid conditions. There may also be high periods of productivity as water clarity increases with the elevated nutrient levels. It is evident that the trophic status is not stable during low water conditions. As more data is obtained under more stable conditions, a more definitive determinations can be made in relation to the reservoirs trophic status. It is evident that current conditions are impairing defined beneficial uses of the reservoir, primarily a sustainable fishery. DWR records indicate that the reservoir is stocked primarily with catchable rainbow trout (*Oncorhynchus mykiss*). Previous reports have indicated that common invertebrates of the lake include the orders Diptera and Trichoptera. In addition there is an abundance of aquatic vegetation (*Chara* sp.) Although the lake has not been treated to control rough fish competition, it appears that the system has no native fishes present.

Phytoplankton in the euphotic zone include the

following taxa (in order of dominance):

Species	Cell Volume (mm ³ /liter)	% Density By Volume
<i>Sphaerocystis schroeteri</i>	55.461	68.80
<i>Oedogonium</i> sp.	13.077	16.22
<i>Anabaena</i> sp.	6.116	7.59
Unk. fil. green algae	3.269	4.06
Pennate diatoms	1.078	1.34
<i>Staurostrum</i> sp.	0.667	0.83
<i>Pandorina morum</i>	0.222	0.28
<i>Stephanodiscus niagarae</i>	0.176	0.22
Centric diatoms	0.044	0.06
<i>Cosmarium</i> sp. 2	0.389	0.48
<i>Oocystis</i> sp.	0.022	0.03
<i>Oscillatoria</i> sp.	0.006	0.01
<i>Closterium</i> sp.	0.006	0.01
<i>Chlamydomonas</i> sp.	0.002	0.00
<i>Cosmarium</i> sp.	0.000	0.00
Total	80.535	
Shannon-Weaver [H']	1.05	
Species Evenness	0.38	
Species Richness	0.60	

As observed the phytoplankton community is dominated by green algae which supports the TSI classification during that period. However, we should note that a significant contributor to the community is the blue-green algae *Anabaena* sp.

The unusually diverse flora is likely the result of macrophyte coverage, which provides many niches for planktonic algae that only grows in close proximity to macrophytes.

Information

Management Agencies

Manti-La Sal National Forest and Price Range	371-2817
Six County Commissioners Organization	896-9222
Division of Wildlife Resources	538-4700
Division of Water Quality	538-6146

Recreation

Fairview Lakes Association	
Castle Country Travel Region (Price)	637-3009

Reservoir Administrators

Cottonwood-Gooseberry Irrigation Company	427-9555
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Pollution Assessment

Nonpoint pollution sources include recreation and grazing. Sheep graze in the vicinity of the reservoir in the

late fall, contributing coliform bacteria, trampling the soil and denuding the land.

There are no point pollution sources in the watershed.

Beneficial Use Classification

The state beneficial use classifications include: boating and similar recreation (excluding swimming) (2B), cold water game fish and organisms in their food chain (3A) and agricultural uses (4).